

REMARKS

Claim Rejections – 35 U.S.C. § 103 (a)

The Examiner has rejected claims 13-16 under 35 U.S.C. § 103 (a) as being unpatentable over Dao et al. (U.S. 6,548,417), and further in view of Nagamura et al. (U.S. 6,340,543).

Claims 13-15

Applicants have amended claim 13. Support for the amendment is provided by the second last paragraph on page 9 of the specification.

Claim 13, as amended, discloses an embodiment of Applicants' claimed invention where a method includes providing a substrate (1100); forming a layer (1400) over said substrate; patterning said layer into a first region and a second region; removing said layer in said first region; inspecting said first region for an opaque defect (1720); forming a reactant gas over said opaque defect; and directing electrons toward said opaque defect, said electrons inducing said reactant gas to etch said opaque defect without ion bombardment. See Figures 1A-1D and Figures 2A-2D.

The Examiner concedes that Dao et al. does not teach forming a reactant gas over an opaque defect; does not teach directing electrons toward the opaque defect; and does not teach the electrons including the reactant gas etching the opaque defect. See lines 1-3 on page 3 of the Office Action mailed on March 22, 2004. However, in the opinion of the Examiner, Nagamura et al. teaches what Dao et al. does not teach.

Applicants respectfully disagree with the assertions of the Examiner. It is Applicants' understanding that Applicants' claimed invention, as claimed in claim 13, as amended, would not have been obvious to one of ordinary skill in the art of fabricating

semiconductors. Applicants wish to point out to the Examiner that Nagamura et al may teach blowing a gas over an opaque extension defect; but fails to teach directing electrons toward the opaque extension defect; and fails to teach the electrons inducing the gas to etch the opaque extension defect without ion bombardment.

On the contrary, Nagamura et al clearly teaches using an ion gun (121) to emit ions to etch an opaque extension defect in a metal film pattern on a surface of a photomask; using an electron gun (122) to supply an electron beam for neutralizing charging up of plus charge on the surface of the photomask (10); using a detector (123) to detect secondary electrons emitted from the metal film pattern on the surface of the photomask during the ion beam sputtering; and using a computer to generate an image of the metal film pattern and the opaque extension defect on the photomask. See lines 40-65 in col. 24. Also, see steps S34 and S36 in the flowchart shown in Figure 25.

Nagamura et al may teach using a gas injector (124) to blow a gas onto the surface of the photomask to enhance the etching selectivity between the metal film pattern and the quartz glass substrate which comprise the photomask. However, it is clear that Nagamura et al, including the portion cited by the Examiner, teaches using the ion beam to etch the opaque extension defect. See lines 9-34 and lines 49-67 in col. 23.

Thus, the cited art of Dao et al. and Nagamura et al., whether individually or collectively, fail to teach, suggest, or render obvious Applicants' claimed invention, as claimed in claim 13, as amended.

Claims 14 and 15 of Applicants' claimed invention are dependent upon claim 13, as amended. Thus, the cited art of Dao et al. and Nagamura et al., whether individually or collectively, also fail to teach, suggest, or render obvious Applicants' claimed invention, as claimed in claims 14 and 15.

In view of the foregoing, Applicants respectfully request the Examiner to withdraw the rejections to claims 13-15 under 35 U.S.C. § 103 (a).

Claim 16

Applicants have amended claim 16. Support for the amendment is provided by the second last paragraph on page 9 of the specification.

Claim 16, as amended, discloses an embodiment of Applicants' claimed invention where a method includes providing a substrate (1100); forming a mirror (1200) over the substrate; forming a buffer layer (1300) over the mirror; forming an absorber layer (1400) over the buffer layer; patterning the absorber layer into a first region and a second region; removing the absorber layer in the first region; inspecting the first region for an opaque defect (1720); dispensing a reactant gas over the opaque defect; and scanning an electron beam over the opaque defect, the electron beam inducing the reactant gas to react with the opaque defect without ion bombardment to form a volatile byproduct. See Figures 1A-1D and Figures 2A-2D.

The Examiner concedes that Dao et al. does not teach forming a reactant gas over an opaque defect; does not teach directing electrons toward the opaque defect; and does not teach the electrons including the reactant gas etching the opaque defect. See lines 1-3 on page 3 of the Office Action mailed on March 22, 2004. However, in the opinion of the Examiner, Nagamura et al. teaches what Dao et al. does not teach.

Applicants respectfully disagree with the assertions of the Examiner. It is Applicants' understanding that Applicants' claimed invention, as claimed in claim 16, as amended, would not have been obvious to one of ordinary skill in the art of fabricating semiconductors. Applicants wish to point out to the Examiner that Nagamura et al. may teach blowing a gas over an opaque extension defect; but fails to teach scanning an electron beam over the opaque extension defect; and fails to teach the electron beam inducing the gas to react with the opaque extension defect without ion bombardment to form a volatile byproduct.

On the contrary, Nagamura et al. clearly teaches using an ion gun (121) to emit ions to etch an opaque extension defect in a metal film pattern on a surface of a photomask; using an electron gun (122) to supply an electron beam for neutralizing charging up of plus charge on the surface of the photomask (10); using a detector (123) to

detect secondary electrons emitted from the metal film pattern on the surface of the photomask during the ion beam sputtering; and using a computer to generate an image of the metal film pattern and the opaque extension defect on the photomask. See lines 40-65 in col. 24. Also, see steps S34 and S36 in the flowchart shown in Figure 25.

Nagamura et al may teach using a gas injector (124) to blow a gas onto the surface of the photomask to enhance the etching selectivity between the metal film pattern and the quartz glass substrate which comprise the photomask. However, it is clear that Nagamura et al, including the portion cited by the Examiner, teaches using the ion beam to etch the opaque extension defect. See lines 9-34 and lines 49-67 in col. 23.

Thus, the cited art of Dao et al. and Nagamura et al., whether individually or collectively, fail to teach, suggest, or render obvious Applicants' claimed invention, as claimed in claim 16, as amended.

In view of the foregoing, Applicants respectfully request the Examiner to withdraw the rejections to claims 16 under 35 U.S.C. § 103 (a).

Claim Objection

Claim 17

The Examiner has objected to claim 17 as being dependent upon a rejected base claim. However, the Examiner has stated that claim 17 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 16, as amended, of Applicants' claimed invention is the base claim of dependent claim 17. There are no intervening claims. Applicants believe that claim 16, as amended, is allowable. See previous section.

In view of the foregoing, Applicants respectfully request the Examiner to withdraw the objection to claim 17.

Conclusion

Applicants believe that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

Should there be any additional charge or fee, please charge Deposit Account No. 02-2666.

If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408)-720-8300.

Respectfully submitted,

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By: _____

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